



# diabetes

## N E W S L E T T E R

University of Medicine and Dentistry of New Jersey ■ Published by UMDNJ-Center for Continuing Education



The 1946 convention of the American Diabetes Association was planned as a festive affair. It was the 25th anniversary of the discovery of insulin. Many physicians, having witnessed insulin's extra-

ordinary effects in preventing death associated with diabetic ketoacidosis, believed that the problems of diabetes mellitus were overcome. Not all physicians agreed. Dr. Henry Dolger, Chief of Diabetes Clinic at Mount Sinai Hospital, New York stunned the audience when he reported that insulin therapy, adequate enough to prevent diabetic ketoacidosis coma did not prevent diabetic retinopathy and blindness.

Subsequently, numerous studies suggested that improvements in diabetic control might limit the progression of diabetic complications, but definitive evidence for tight control was lacking. Clinical studies were not feasible until the development of inexpensive methods

for measuring the levels of blood sugar at home. By the early 1980s, glycosylated hemoglobins were found to reflect the average level of glucose in the blood over the prior three months. About the same

time, finger tip glucose determination methods were introduced to patients. Finally the tools were available for clinical investigators to perform a definitive study relating long term diabetic control to the development of diabetic complications. The Diabetes Control and Complication Trial (DCCT), a multicenter study organized by the National Institute of Health, began recruiting in 1983.

management of an intensely treated cohort of patients reduced hemoglobin A<sub>1c</sub>, the best characterized glycosylated hemoglobin, to a mean of approximately 7.2% compared to a mean of 9.3% in

a group of patients undergoing conventional insulin treatment. Although normal A<sub>1c</sub> is less than 6%, the

decrease in A<sub>1c</sub> to 7.2% was associated with reduction in evidence of diabetic neuropathy, retinopathy, and nephropathy of 50 to 60%. Since complications of diabetes mellitus have been related to hyperglycemia, the readily measurable marker of the diabetic state, a consensus of diabetologists believe that the conclusion of the DCCT must guide and direct the control of all patients with diabetes mellitus. Thus the goal of universal normalization of glucose control has become a priority in diabetic treatment reminiscent of the experience 25 years earlier when normalization of blood pressure was shown to prevent stroke and cerebral hemorrhage.

The precise criteria for optimization

## developing guidelines in diabetes care

Table 1a

## ADULT NON-PREGNANT DIABETES PERFORMANCE MEASURES > OR = 18 YEARS OF AGE

FREQUENCY OF VISITS.....	if meeting goals: every three to six months if not meeting goals: every three months or as indicated
WEIGHT.....	every visit
CARDIOVASCULAR ASSESSMENT.....	BP every visit; EKG in adults, baseline and prn
FEET EXAMINATION.....	check every routine visit (two to four times/year) to include vascular and neuro check
EYE EXAMINATION.....	dilated eye exam yearly
LIPID PROFILE.....	with initial diagnosis; then yearly if abnormal, every 5 years if normal
HEMOGLOBIN A <sub>1c</sub> .....	if meeting goals: yearly or as indicated if not meeting goals: every three months
FASTING OR RANDOM BLOOD GLUCOSE.....	every visit
CREATININE.....	yearly
U/A FOR MICROALBUMIN.....	yearly
FLU VACCINE.....	yearly
PNEUMOVAX.....	offered every 5 years

of diabetic control have become a focus of much discussion and debate since the DCCT demonstrated that intensive insulin regimens place patients with Type I diabetes at significant risk of hypoglycemia. Meanwhile the inadequacy of methods for treating obesity confounds the efficacy of drugs in the treatment of Type II diabetes mellitus. Thus, the American Diabetes Association and the American Association of Clinical Endocrinologists developed consensus guidelines based on the results of the DCCT which are considered safe and reasonable in the context of currently available therapeutic modalities. Patients able to achieve such goals are expected to enjoy some freedom from diabetic complications and their care would ultimately be less costly. Consequently, guidelines or performance measures have attracted significant government and managed care interest.

Published guidelines are extensive and advocate the evaluation and management of all other risk factors for accelerated atherosclerosis and insidious nephropathy. The New Jersey Diabetes Council, a diverse group of clinicians, subspecialists, diabetes educators, nurses, public health officials and clinical perfor-

mance analysts, organized by the New Jersey Department of Health and Senior Services, with support from the Center for Disease Control and Prevention, reviewed many of the published standards to extract essential criteria useful for primary care providers who treat the majority of diabetic patients. Tables 1a + b list these essential performance measures.

Successful implementation of these guidelines will depend in part on the practitioner's compelling interest in educating and motivating their patients with diabetes. Realistically, efforts may need to be limited in a particular patient as economic factors and personality traits may impair a patient's willingness to achieve goals. In such cases, some attainable and reasonable objectives should be negotiated between the patients, their family and the physician.

## thresholds for intervention

### ▲ GLYCEMIC GOALS

Table 2 lists the current American Diabetes Association's recommendations for diabetes control based on critical analysis of the DCCT. Hemoglobin A<sub>1c</sub> can

be monitored every 6 months in stable patients who achieve their goal. Values of 8% or more require follow-up every 3 months with emphasis on education and/or adjustment in therapy as further discussed in the following article by Dr. Krosnick and educators Carson and Johnson. Patient self-monitoring glucose records need to be reviewed. Frequency of glucose monitoring depends on the type of diabetes, pharmacotherapy, and the patient's stability or risk of hypoglycemia. For example, a patient with Type II diabetes maintaining an A<sub>1c</sub> of less than 7% every six months on monotherapy with an oral agent who is not experiencing hypoglycemia need not monitor glucose four times a day. Nevertheless, a log should be maintained documenting glucose surveillance at a reasonable frequency to detect a change in control. More monitoring is advised during life style alterations such as illness or travel.

Adjustments in the diabetes treatment regimen are based on the A<sub>1c</sub> and the pattern and frequency of hyperglycemia. Failure to attain glycemic goals or a discrepancy between the patient's glucose log book and the A<sub>1c</sub> may require consultation with a diabetic specialist. An increasing number of insulin formulations, delivery systems, and treatment schedules can be discussed by the Diabetologist for treating Type I patients. Similarly, various forms of newer oral agents used in combination with insulin, can be applied to intensify the treatment of Type II diabetes.

### ▲ CLINICAL EXAMINATION

Essential elements in the longitudinal evaluation of diabetic patients are the measurement of weight and blood pressure together with clinical assessment of the cardiovascular system, eyes, feet and nervous system. Changes in weight are indicative of the stability of diabetic control and the motivational forces at play in the patient with Type II. The threshold for blood pressure intervention in diabetes are values greater than 135/85mm Hg. Early treatment is intended to offset the impact of this significant risk factor on

the vascular system. The cardiovascular system is the most frequent site of diabetic complications. Inquiry and the search for new signs of cardiac and vascular disease should be done at a frequency appropriate to the risk factors conferred by age, type and duration of diabetes, as well as the presence of other predisposing factors.

Since photocoagulation can preserve vision in diabetes mellitus, an annual dilated examination by a specialist is recommended. Peripheral neuropathy can lead to catastrophic foot complications. Both nerves and feet should be routinely checked and the patient advised on foot care and risk factors for ulceration.

#### ▲ LABORATORY EXAMINATION

Treatment of proteinuria with converting enzyme inhibitors and tight glycemic control have been shown to slow progression of renal impairment. Thus, urine is checked for protein routinely. Microalbuminuria, an early sign that the kidney is at risk of progressing to proteinuria, should be checked annually. A value greater than 20ug/min (30 mg/24h) indicates greater emphasis on blood pressure control and diabetes management.

Measurement of the creatinine and electrolytes annually permits assessment of kidney function which also may be affected by non-proteinuric disorders caused by medications, chronic pyelonephritis, papillary necrosis or functional obstruction associated with neurogenic bladder. Elevated serum potassium may indicate hyporeninemic hypoaldos-

teronism common in elderly diabetic patients.

Lipid studies should be obtained annually if abnormal, because hypercholesterolemia and low HDL accentuate the risks of hyperglycemia on large blood vessels. The recommended LDL cholesterol level in diabetes mellitus is less than 130 mg/dl.

## health maintenance

Diabetic patients require expert medical advice. Smoking cessation efforts are crucial. Vaccinations should be current as there is an increased risk from infections. In the reproductive age woman, pre-pregnancy counseling is essential to preclude unplanned pregnancies which put the embryo and fetus at developmental risk while exacerbating diabetic retinopathy and nephropathy in the mother.

#### ▲ NUTRITIONAL COUNSELING AND TRAINING IN SELF-MANAGEMENT

Implicit in all recommendations is that patients understand how nutrition and exercise will facilitate attainment of the glycemic goals appropriate for their age and circumstances in life. Highly motivat-

ed patients with Type II diabetes mellitus can often achieve excellent control or even normalization with life style modification. Certified Diabetes Educators (CDE) provide the information either individually or in group education programs. At the time of diagnosis, patients also need to learn self-management methods, (including the use of glucose meters and insulin injection techniques) general information on pharmacotherapy, and methods for dealing with daily problems such as acute illness and foot care.

## conclusion

There are over 8 million known persons with diabetes in the United States. A similar number remain unaware of their asymptomatic diabetes mellitus, an insidious risk factor for multiple complications. The great burden of caring for these patients will fall on increasing numbers of primary care providers. These patients represent an enormous risk to themselves and the health care system. The implementation of DCCT guidelines for treating diabetes should limit the risk and the cost as improved methods for maintaining euglycemia in all diabetes continue to emerge. (Louis Amorosa, MD, Professor of Clinical Medicine, UMDNJ-RWJMS) ■

## references

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Table 1b

## APPROPRIATE REFERRALS TO SPECIALISTS

NUTRITIONAL COUNSELING.....	Registered Dietitian
SELF-MANAGEMENT EDUCATION.....	RN, CDE
FAILURE TO OBTAIN GLYCEMIC CONTROL.....	(see Table 2) Diabetologist
RETINOPATHY.....	Ophthalmologist/ Retinal Specialist
FOOT DEFORMITIES, NEUROTROPIC ULCERS.....	Podiatrist, Orthopedic or Vascular Surgeon
NEPHROPATHY.....	Renal Specialist
PREGNANCY.....	Maternal Fetal Specialist

Table 2

## RECOMMENDATIONS FOR GLYCEMIC CONTROL

BIOCHEMICAL INDEX.....	NORMAL	GOAL	ACTION SUGGESTED
FASTING/PREPRANDIAL.....	<115 mg/dl	<120 mg/dl	<80 or >140 mg/dl
BEDTIME GLUCOSE.....	<120 mg/dl	100-140 mg/dl	<100 or >160 mg/dl
HbA1C (4-6%).....	<6%	<7%	>8%

The Diabetes Control and Complications Trial (DCCT) strongly suggests that intensive diabetes control is important in persons with Type II Diabetes (NIDDM). Complications of

pathophysiology of NIDDM and its complications, and our current armamentarium of new pharmacologic agents into clinical practice makes near-normal glycemia attainable in most patients. If

#### ▲ CRITERIA FOR IMPAIRED GLUCOSE TOLERANCE (IGT)

▲ Fasting PG >115 & <140mg/dl on 2 or more occasions

▲ Oral Glucose Tolerance Test: 2-hour PG 140-199 mg/dl; intervening PG >200 mg/dl

Physicians should have a high index of suspicion for disorders of carbohydrate

tolerance. About half the persons with NIDDM are undiagnosed, representing almost 8 million Americans. It is estimated that NIDDM occurs in 6% of U.S. citizens; IGT is twice as common as NIDDM, i.e. almost 12%; GDM occurs in 2-5% of pregnancies.

The risks for NIDDM are demography, genetics, lifestyle, obesity, parity and intrauterine factors. Epidemiological studies of race and ethnicity have shown the highest likelihood of NIDDM are among African Americans, Mexican Americans, Asian Americans and Native Americans. Hispanic Americans have 2-3 times the risk of diabetes of Caucasian Americans.

AGE AND SEX are important risk factors. The risk is low before age 30 and rapidly increases in the older decades. The highest rates are among octogenarians. NIDDM is 40% greater in U.S. women than in men.

GENETIC FACTORS include racial enhancement of genes among homogeneous ethnic groups, gene-sharing among Native Americans with Hispanics or with Caucasian Americans or Hispanics with Caucasian Americans.

FAMILY HISTORY is a well established risk factor:

DIAGNOSIS BEFORE AGE 50:

One Parent: NIDDM Risk = 14%

Both Parents: NIDDM Risk = 25%

Sibling: NIDDM Risk = 14%

DIAGNOSIS OF NIDDM IN IDENTICAL TWIN:

NIDDM Risk = 58-75%

## the evaluation and treatment of hyperglycemia in type II diabetes: an algorithm

NIDDM cost over \$100 billion annually. Prevention of complications is the *raison d'être* for early diagnosis; and the prompt, intensive and ongoing treatment of the 16 million persons with diabetes in the United States.

New knowledge of Impaired Glucose Tolerance (IGT) and Gestational Diabetes (GDM), and their progression into overt Type II Diabetes and culmination into insulin-requiring Type II Diabetes, demands attention now. Genetic and clinical problems associated with IGT include obesity, hypertension, dyslipidemia and a predisposition to macroangiopathic complications. All of these respond to preventive intervention.

Translating our understanding of the

we understand the risk factors for the complications of NIDDM, we can intervene therapeutically to prevent cardiovascular, peripheral vascular and cerebrovascular disease, amputations, vision disorders, nephropathy and neuropathy.

### 1. screening for diabetes (non-pregnant adults)

#### ▲ DIAGNOSTIC FINDINGS

▲ Classic signs & symptoms, random PG >200 mg/dl

▲ Fasting Plasma Glucose (PG) >140 mg/dl on 2 or more occasions

Table 3

#### THE KEY POINTS OF AN ALGORITHM FOR OFFICE MANAGEMENT OF NIDDM ARE:

1. Use a systematic approach to screening for NIDDM, IGT and GDM,
2. Establish a clinical and laboratory data base on each patient at the first office visit,
3. Employ national standards for glycemic, lipid & BP control,
4. Ensure that the patient's knowledge and skills will result in quality self-management, including self-monitoring of blood glucose (SMBG) by utilizing certified diabetes educators (CDE-nursing),
5. Establish weight and nutritional goals for each patient and implement them with the assistance of certified diabetes educators (CDE-dietetics),
6. Evaluate each patient's exercise-related risk factors and develop a safe and acceptable balance between usual work-related exercise, recreational exercise and prescribed therapeutic exercise programs, and
7. Practice continuing care: This includes minimum key tests and examinations to be done on all Type II diabetics quarterly, annually or at other intervals, according to each patient's particular needs; utilize professional consultants for special needs: diabetologists/endocrinologists, ophthalmologists, nephrologists, podiatrists, orthotists, prosthetists, psychologists, exercise physiologists, etc.

MULTIPLE GENES, combined with ENVIRONMENTAL FACTORS, seem to be accepted risk factors for NIDDM, a heterogeneous disease.

OBESITY, especially total body adiposity (i.e. based on percentage of body fat, Body Mass Index) and central obesity (based on Waist/Hip Ratio), is an accepted NIDDM risk factor. Central abdominal obesity alone appears to be an important NIDDM risk factor. The latter is associated with lean extremities, a large percentage of intra-abdominal adiposity, and a genetic predisposition.

PARITY AND INTRAUTERINE FACTORS may be risk factors for NIDDM based on the higher rates of maternal diabetes as compared to paternal diabetes. The increased number of completed pregnancies, associated with their diabetogenic intrauterine hormonal onslaught, are the probable risk factors for NIDDM.

A sedentary LIFESTYLE and inappropriate dietary habits, seem to be logical risk factors for NIDDM. Epidemiological studies of nurses and male physicians who engaged in regular physical exercise showed a 20% and 30% respective reduction in NIDDM. Other lifestyle factors are urbanization and "acculturation", i.e. assumption of a Western Lifestyle (especially a high fat diet and reduced physical activity). In addition, SOCIOECONOMIC MARKERS such as lowest income and educational levels, are associated NIDDM risks.

## 2. the data base

An effective individualized patient management plan is based on information about that patient. This Data Base is gathered in the traditional manner:

### ▲ COMPREHENSIVE DIABETES HISTORY

- ▲ Diagnosis, previous treatment, quality of glycemic control;
- ▲ Weight history, diet review; complications;
- ▲ Details of previous treatment: diet, exercise, oral hypoglycemic agents, insulin therapy;

▲ Diabetes education, self-management training, family education;

▲ Glucose monitoring equipment, SMBG records;

▲ Consultants: podiatry, ophthalmology (annual dilated retinal exam), dental care;

▲ Past and associated medical, surgical and obstetrical history;

▲ Educational & intellectual levels;

▲ Family support network;

▲ Economic status; occupational history;

▲ Alcohol, tobacco, drug use/abuse; and

▲ Thorough review of systems.

### ▲ COMPREHENSIVE PHYSICAL & LABORATORY EXAMINATIONS

▲ Complete physical examination;

▲ Detailed neurological and vascular examinations;

▲ Dilated/undilated ophthalmoscopic examination;

▲ Laboratory studies: hemogram, urinalysis, chemistry profile, lipid profile, thyroid profile, HbA<sub>1c</sub>, 24 hour creatinine clearance (CrCl), total protein (TP) & microalbumin excretion rate (MAE);

▲ EKG, (unless report done within the last 6-12 months is available)

▲ Stress test prior to vigorous exercise therapy.

## 3. national standards for glycemic control

The American Diabetes Association (ADA) has established standards for glycemic control and goals for lipid and blood pressure levels for non-pregnant adults. While these are guidelines, it behooves primary physicians to utilize them. Self-monitoring of blood glucose 2-4 times daily is essential to attain glycemic control. The recommended performance measures for glycemic control have been noted above. (See Table 1 and 2, above article)

## 4. utilization of certified diabetes educators

Primary physicians rarely have certified diabetes educators (CDE's) in their offices. However, CDE's are readily available in nearby diabetes education centers, endocrinology practices, hospital outpatient programs and in local health agencies. New Jersey's Diabetes Law, enacted by the State Legislature and signed by the Governor in January 1996, mandates that managed care organizations provide reimbursement to patients with diabetes for disease related education. Physicians should utilize these benefits for their diabetic patients. This will ensure high quality self-management, patient and family member skills and will establish weight and nutritional goals for each patient.

## 5. nutritional goals

- ▲ Provide meal-planning guidelines
- ▲ Balance food intake with pharmacotherapy & exercise
- ▲ Maintain desired weight by monitoring calorie consumption
- ▲ Kcals: 10-20% from protein <10% from saturated fat +/-10% from polyunsaturated fat

## 6. establish a safe and effective exercise program

The physician who treats diabetes should recognize the potential benefits of exercise for all with Type II diabetes, regardless of the age or complications. Careful evaluation for risk factors and risk/benefit ratios of individual exercises for each patient can be established with the advice of an exercise physiologist in the community. These professionals are found in the cardiac rehabilitation programs in most hospitals.

Table 4

PHARMACOTHERAPY: GUIDELINES			
CHARACTERISTICS OF ORAL HYPOGLYCEMIC AGENTS: MONOTHERAPY			
generic name .....	BRAND NAME	DAILY DOSAGE (MG)	TIME ACTION (HOURS)
glipizide .....	glucotrol	2.5 - 40	12 - 24
	glucotrol XL	5-60	24
glyburide .....	diabeta	1.25 - 20	16 - 24
	micronase		
	glynase prestab	0.75 - 12	12 - 24
glimepiride .....	amaryl	1 - 8	24
metformin .....	glucophage	1,500 - 2,500	5.5
acarbose .....	precose	25 - 150	2-4

Table 5

THE NEWER ORAL AGENTS, METFORMIN AND ACARBOSE, HAVE REVOLUTIONIZED MONOTHERAPY FOR NIDDM IN FAVOR OF COMBINED THERAPY
Sulfonylurea or glimiperide + metformin &/or acarbose
Sulfonylurea or glimiperide + insulin
Sulfonylurea or glimiperide + metformin + insulin
Sulfonylurea or glimiperide + acarbose + insulin
Metformin + acarbose
Metformin + insulin
Acarbose + insulin

## 7. continuing care

Assumption of the care of a person with NIDDM entails a major commitment by the health care team. The frequency of visits and referrals to specialists depends on the patient's diabetes control, complications, etc. It is recommended that the frequency of visits is contingent upon the stability of diabetic control: stable patients meeting glycemic goals may be seen every six months. Patients not meeting goals, every three months. Each visit requires an interval history (symptoms, hypo- and hyperglycemia, intercurrent illnesses, medications, etc.), specific tests and examinations, a review of diet and medication compliance, and the selfmonitoring glucose log or computer printout from a memory glucose meter.

## pharmacotherapeutic algorithm

Although the foundation of treatment of NIDDM is diet and exercise, the current array of pharmacotherapeutic agents is awesome. Primary physicians can now attain near-normal glycemia with the appropriate utilization of safe and effective drugs as monotherapy or in combination. It is crucial that the physician who treats NIDDM be fully cognizant of the content of the package inserts, especially with regard

to dosage of insulin, 10-15 units, is added to oral agents in the evenings or before dinner when fasting blood glucose or hemoglobin A<sub>1c</sub> values exceed the guidelines considered reasonable for an individual patient. Symptomatic severe hyperglycemia requires intensive insulin therapy.

Post-marketing studies and clinical practice have shown the merits of combined therapy, but enthusiasm must be moderated by as yet unstudied pharmacoeconomic considerations and the greater potential for adverse events of combining different classes of oral agents and insulin. The rules should be: 1) be familiar with the agents, 2) select your patients cautiously

for combined therapy and 3) monitor them very carefully. The playing field has not been tested completely; so expect improved control, but look out for the unexpected bounce. (Arthur Krosnick, MD, CDE, co-chair, Patricia Carson, RN, MA, CDE, CNS and Mary Johnson, RD, MS, CDE members, NJ Diabetes Council) ■

to dosage alone and in combination with other agents, potential adverse events, drug interactions, etc. If prescribed properly, the oral hypoglycemic drugs alone or in combination with insulin work well. A working relationship between the physician, nurse, pharmacist and patient is very helpful.

The first generation sulfonylureas (tolbutamide, chlorpropamide, tolazamide) have largely been replaced by glipizide, glyburide, and recently, glimepiride. Most patients respond satisfactorily initially, but secondary failure to respond occurs in 5-10% of patients per year after 5 to 15 years of treatment. As many as 35% of patients with NIDDM become insulin users. Studies have shown that those patients with adequate insulinogenic capacity, as demonstrated by C-peptide levels, did well with combined therapy, i.e. insulin with oral antidiabetic agent. Usually, a low

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## EDITOR'S NOTE

The FDA has recently approved troglitazone (Rezulin™) as the prototype of a new class of oral agents designed to sensitize skeletal muscles to the action of insulin. This drug is approved for insulin-requiring patients with type II diabetes.

## cme test questionnaire

1. The results of the DCCT demonstrate that intensive insulin management:
  - a. Decreased diabetic retinopathy
  - b. Reduced Hemoglobin A<sub>1c</sub>
  - c. Reduced the evidence of complications of diabetes 50 to 60%.
  - d. All of the above
2. Normal Hemoglobin A<sub>1c</sub> (which is the best indicator of glycosylated hemoglobin) is:
  - a. <5.5%
  - b. <6.0%
  - c. >7.2%
  - d. >9.4%
3. Which of the following statements is true:
  - a. Patients with NIDDM need only see their physician every five years for a Hemoglobin A<sub>1c</sub>.
  - b. The DCCT results proved that tight control of diabetes reduced the complications of the disease.
  - c. It is not a priority to examine a diabetic patient's feet on every visit.
  - d. All patients with diabetes should be placed on a weight reduction diet plan.
4. Optimization of diabetic control:
  - a. Is only necessary for insulin dependent diabetes
  - b. Is evidenced by reduced Hb A<sub>1c</sub> as close to 6% as possible for the individual
  - c. Enables patients to enjoy some freedom from diabetic complications
  - d. A and B
  - e. B and C
5. Recommended LDL Cholesterol levels for diabetes mellitus is less than:
  - a. 130 mg/dl
  - b. 150 mg/dl
  - c. 200 mg/dl
6. The following two new oral agents have revolutionized monotherapy for NIDDM:
  - a. Glyburide and Metformin
  - b. Metformin and Acarbose
  - c. Acarbose and Glipizide
7. The first generation sulfonylureas have largely been replaced by:
  - a. Glipizide, glyburide and glimiperide
  - b. Glucotrol, Diabeta and Precose
  - c. Glucophage, Glucotrol and Diabenese
8. Which of the following statements is incorrect:
  - a. Most patients with NIDDM should be referred to a registered dietitian for nutritional counseling.
  - b. Hemoglobin A<sub>1c</sub> is only indicative of blood sugar levels for the past two weeks.
  - c. Referrals for patient self-management diabetes education should be made to an RN, CDE.
9. The recommended fasting/preprandial blood sugar parameters that necessitate action to improve glycemic control are:
  - a. <80 or > 200 mg/dl
  - b. <80 or > 140 mg/dl
  - c. <60 or >140 mg/dl
  - d. <60 or >200 mg/dl
10. Presently, the Center for Disease Control and Prevention is funding a state grant to implement minimal standards of care for all diabetic patients thereby incorporating the findings of the DCCT into practical use. Key performance measures identified in these standards are:
  - a. Weight
  - b. Lipid Profile
  - c. Hemoglobin A1C
  - d. Appropriate referral for self-management education to an RN, CDE
  - e. All of the above

For additional copies of newsletter, comments and inquiries, contact DOROTHY CAPUTO, MA, RNC, CNA, CDE, Editor and Project Coordinator at (908) 235-7430\* or e-mail [caputoda@umdnj.edu](mailto:caputoda@umdnj.edu)  
UMDNJ-CCE gratefully acknowledges an unrestricted educational grant from HOECHST MARION ROUSSEL PHARMACEUTICAL COMPANY for the publication of this newsletter.

\*Note: Effective June 1, 1997, our phone number will be (732) 235-7430.

# diabetes

N E W S L E T T E R

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## questionnaire answer sheet

1. Read the newsletter carefully.
2. The questions are designed to provide a useful link between each submission and your everyday practice. Read each question, choose the correct answer, and record your answer on this form. Retain a copy of your answers so that they can be compared with the correct answers that will be sent to you at a later date.
3. Type your full name, address, and Social Security number in the space provided.
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5. Your answers will be graded, and you will be advised that you have passed (or failed). An answer sheet containing all correct answers will be mailed to you. Review the parts of the newsletter addressing any questions you have missed and read the materials suggested in the listed references.
6. A minimum score of 70% correct must be obtained in order for credit (AMA/PRA category 1, 1.0 credit hours) to be awarded.

PLEASE CIRCLE APPROPRIATE LETTER

- |                         |                         |
|-------------------------|-------------------------|
| 1.    A   B   C   D     | 6.    A   B   C         |
| 2.    A   B   C   D     | 7.    A   B   C         |
| 3.    A   B   C   D     | 8.    A   B   C         |
| 4.    A   B   C   D   E | 9.    A   B   C   D     |
| 5.    A   B   C         | 10.   A   B   C   D   E |

Name	Degree
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# diabetes

NEWSLETTER

University of Medicine and Dentistry of New Jersey ■ Published by UMDNJ-Center for Continuing Education

Was this publication balanced, free of commercial bias? ☒ Yes ☐ No

Did this CME activity meet the stated objectives? ☐ Yes ☐ No

What topics would you like addressed in future publications?

[illegible]

UPCOMING EVENT:

On October 30, 1997, the Diabetes Control Program, New Jersey Department of Health and Senior Services, will host a site for the National Diabetes Satellite Town Hall Meeting. The intended audience for the conference will consist of persons and organizations with a specific interest in reducing the burden of diabetes. Specifics of the event will be provided in the next newsletter.

## objectives

Upon completion of this CME activity, the participant should be able to:

1. Discuss the impact of the DCCT on the management of diabetes
2. Recognize the role of hemoglobin A<sub>1c</sub> in the treatment of diabetes
3. List essential elements in an individualized patient management plan
4. Discuss the role of diabetes patient self-management education in the treatment of diabetes
5. State three pharmacotherapeutic options available in the treatment of diabetes
6. Define the minimum standards of care for those with diabetes

## participating organizations

First Option, University Health Plan, CAMcare, Eric B. Chandler Health Center, Jersey City Family Health Center, Newark Community Health Center, North Hudson

Community Action Health Center, Plainfield Neighborhood Health Center and VNA of Central Jersey Community Health Center.

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This Newsletter is a CME activity published by the University of Medicine and Dentistry of New Jersey (UMDNJ)-Center for Continuing Education and distributed to a select number of primary care providers in private HMO's and

federally funded qualified health centers.

The newsletter will be published semi-annually as part of the educational component of an outcome research project advocating principles of diabetic management.

## credits

This newsletter was reviewed for relevance, accuracy of content and time required for participation by Sandra Moss, MD, John Orzano, MD, Steven H. Schneider, MD, Ronnie Davidson, Ed.D., Elizabeth B. Congdon

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# diabetes

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